

*spinosa*; *Anemone nemorosa*, Keir woods; *Montia fontana*; *Geranium molle*; *Equisetum arvense*, in fructification; *Viola canina*; *Mercurialis perennis*; *Corylus avellana*; *Luzula campestris*; *Luzula sylvatica*, flowers beginning to expand; *Chrysosplenium oppositifolium*; *Cerasus avium*, Kippenross; *Cheiranthus Cheiri*, Dunblane Cathedral; *Salix caprea*; *Salix cinerea*.

Besides these, he noticed the occurrence of *Valeriana pyrenaica*, *Sedum Telephium*, and *Convallaria majalis* in the same district, but not in flower.

7. Dr. Balfour exhibited a flowering specimen of *Quassia amara*, from the Botanic Garden, and gave a description of the various parts of the flower. He also showed a specimen of *Cinnamomum nitidum*, which was in flower in the Botanic Garden, and made remarks on the distinctions betwixt it and *C. eucalyptoides*, with which it has been confounded. The plant figured as *C. nitidum* in Hooker's 'Exotic Flora' and in Hayne's Plates is *C. eucalyptoides*. A description of these plants will appear in the 'Edinburgh New Philosophical Journal.'

8. Dr. Balfour exhibited a fine specimen of dry rot (*Merulius lachrymans*) on a plank several feet in length, taken from a cellar at Holyrood Palace.

9. Mr. Stark exhibited specimens of the following woods, and made some short remarks upon them, viz. :—

*Kydia calycina*, used in clarifying sugar; *Myrica cerifera*, Candleberry Myrtle; *Ficus indica*, Banyan tree; *Achras bullata*, remarkable for its rapid growth and the density of its wood; *Paulownia imperialis*, *Nerium Oleander*, *Rhododendron arboreum*, *Araucaria braziliensis*, *Citrus vulgaris*.

## MISCELLANEOUS.

### *Observations on the Geology and Natural History of Mexico.*

By W. H. PEASE.

HAVING noticed among the published correspondence from the army in Mexico but little information respecting the natural features of that country, I take the liberty of presenting to the Academy the result of a few hasty observations made on a part of the route from Vera Cruz to the city of Mexico. But few opportunities for scientific investigations were afforded to those connected with the army, on account of the active operations they were incessantly engaged in, from the time of leaving the coast until the return of the army. I was enabled however, principally in company with scouting parties, to visit that part of the country between the range of volcanos, bounding the plains of Perote and Puebla on the east, and the Gulf of Mexico, comprising the greater part of the State of Vera Cruz, and to make some collections in natural history.

The general outlines of the country I presume it is unnecessary for me to detail. The plains of Cuetlachlan, or the *tierra caliente*, as they are more usually called, comprise that region of country bor-

dering the Gulf of Mexico. They are about twenty-five miles in width, extending back to the Plan del Rio by a gradual ascent of thirty feet per mile, with but few elevations or depressions, except at the river Antigua, and other small streams which pass through them in a north-easterly direction. Beyond the Plan del Rio the ascent increases over a regular succession of hills and plains, until you reach the foot of the range of mountains in which the peaks of Orizaba, Perote and others are situated. This range forms the rim or eastern boundary of the plains of Anahuac, which are more commonly known as the *tierra templada*, and are about thirty-five miles in width. The sides and top of this mountain-range are called the *tierra fria*, immediately beyond which lie the great table-lands of Mexico.

The table-lands extend, with little or no variation in their general level, to the Cordilleras bordering the Pacific Ocean, though they are divided into several plains by ranges of volcanos and porphyritic rocks.

The tierra caliente is bordered on the Gulf of Mexico by low sand-hills, from four to six miles in width, not bare, as has been represented, but covered with a thick chapparel, or thicket of Cacti and thorn-bushes, to within reach of the water. Great numbers of freshwater and land shells are found on these hills and on the beach, thrown up from the Gulf, which may be referred to living species.

After passing these hills a few miles, I noticed at one locality a layer of limestone. It is covered by a coarse conglomerate of volcanic and porphyritic rocks, which extends over the whole upper part of the tierra caliente, rendering the surface rough and stony. At the Puenta Nacional it is exposed to the depth of 200 feet, interstratified irregularly with veins of fine sandstone. Deep gullies are worn through it to the rivers, by the drainage of the plains during the wet season. The rivers are the only source of irrigation, receiving no supplies in their course from the mountains to the coast.

The greater part of the plains is covered with a dense growth of vegetation, so thick that it would seem almost impossible for the soil to support more, and the trees and bushes are loaded with an innumerable variety of parasitical plants and vines, interlacing and binding them together in such a manner as to render them absolutely impenetrable. On other parts, particularly between the conglomerate and the coast, the chapparel is more open, dotted with clumps of low dwarfish trees and Cacti, and affords grazing to herds of half-wild cattle, in which the property of the inhabitants principally consists. To the south of Vera Cruz the cultivation of cotton has been introduced; it is of white fine quality, but perhaps, from want of proper cultivation, the staple is very short, so that when worked it requires to be mixed with other varieties.

The inhabitants live mostly on the small bottom lands of the rivers, their crops consisting of corn, chili, and frijoles. They are a puny and sickly people, being subject to intermittent and typhoid fevers during the months after the close of the wet season. Though the

temperature at the Puerta Nacional, in the months of September, October and November, averaged 80° at 3 p.m. with little variation, the atmosphere was so loaded with moisture that it was impossible to keep our fighting-tools free from rust for twenty-four hours at a time, protect them as we might.

The animals met with at the Puerta Nacional and on the tierra caliente, are for the greater part common to Texas and the north; the common deer is abundant, though of small size; the red fox, the prairie wolf, and the spotted tiger-cat are frequently met with, and the Puma also, though more frequently in the mountains above. Reptiles are exceedingly numerous, though of few species. The royal iguano, as it is called, is found in the cliffs bordering the river Antigua, and grows to a very large size; one killed by a Mexican measuring nine feet in length. The flesh of this species, as well as that of others, is considered quite a delicacy by the inhabitants. I observed a curious habit of a species of lizard, which has not been noticed before to my knowledge; it is that of passing over the water in an erect position, resting on its hinder parts, and propelling itself by its hind-feet, its tail lying horizontally on the water, acting as a rudder. In the San Juan and Antigua rivers I noticed an alligator which appeared to be different from our common species; the young, a specimen of which I caught, is entirely black, without the usual yellow markings on its back.

Land and freshwater shells are scarce, the beds of the streams being very stony; nearer the coast, however, they may perhaps be more abundant. After passing the tierra caliente, the ascent increases over the tierra templada, as above stated, to the foot of the mountains. The whole of the surface of this part of the country is much broken by low ranges of volcanic hills and deep ravines or barrancas, as they are called, of 200 to 500 feet in depth, which run commonly at right angles from the mountain-chain above. The city of Jalapa derives its name from that of an ancient Indian village a few leagues distant, and signifies "built among barrancas."

Most of the hills are of volcanic formation, though they are not all so, as I have seen stated. The limestone shows itself in the valleys at the foot of the mountains, and in the barrancas, when of sufficient width: it is, of course, very much altered from its connexion with the volcanic rock, being uncrystallized and whitened: it is not fossiliferous, and, as far as I noticed, unstratified. At Quarterpec, a few leagues south of Jalapa, and at other places, it is burnt by the Indians, and the lime is sold in the neighbouring towns and cities.

The soil of the valleys is rich, and under cultivation produces during the whole year, rice, coffee, tobacco, sugar-cane, corn and other vegetable productions, fruit, &c. of both tropical and temperate climes, in great abundance. The average of temperature I should place lower than Humboldt. During the months of January and February there were several nights of severe frosts in the neighbourhood of Jalapa and below, which stripped the trees on the hills of their foliage, but I was told it was of very unusual occurrence.

Every one who has visited this country must agree with Humboldt, that the region comprising the tierra templada and the eastern slope of the mountains above, is "one of the most beautiful and picturesque in the world." No other part of the world, perhaps, can present scenery of such sublime and picturesque beauty. When travelling over the rough and barren hills, strewn with volcanic rocks, the scene is suddenly changed by coming upon the edge of a barranca or ravine, its bottom lands several hundred feet below you, highly cultivated in fields of sugar-cane, corn, &c., dotted with the straw-thatched cottages of the Indians, and presenting a most perfect panorama or picture of nature's own painting, inclosed, as it were, in a frame of black and jagged rocks, which form its perpendicular sides, without a vestige of vegetation growing upon them. Far off below lies stretched out the tierra caliente, having the appearance of an immense park, bounded on the horizon by the Gulf; and yet, elevated as your position seems to be, on turning to look in the opposite direction, Orizaba, with its silvery cap of eternal snow, and the base and rocky peak of Perote, still stand above you eight or nine thousand feet.

In addition to the animals on the tierra caliente, I noticed the raccoon, the opossum, the *Bassaris astuta*, or ring-tailed weasel, as it is called by the Mexicans, and several species of deer. I noticed also a porcupine, which struck me as different from the common species. The puma and jaguar are also met with in the mountains.

The mammalia of this part of Mexico seem to be identical with, or nearly allied to, more northern species, while the birds for the greater part are found also much farther south. Lizards are less numerous, but snakes more so, than on the tierra caliente. The plants I should think more characteristic than either mammalia or birds, and present a rich field for investigation.

• The two species of Jalapa-root are collected in small quantities, only on the sides of the mountains, by the Indians, the greater part exported being brought from the north and west of the city of Mexico.

In the neighbourhood of Jalapa, and on the road passing over the mountains, I noticed several beds and hills of sand, in some of which are deposits of the sulphate of lime, finely crystallized in the form of sand. I was told by the Mexicans that they had dug up here young clams, perhaps *Cyclas*. I mention this fact in confirmation of my opinion, that the plains of Anahuac above, or of Perote and Puebla, as they may be called, have been drained by one of the many revolutions (geological, not political) which this country has passed through.

The eastern part of the plains above, for the distance of twelve or fifteen miles, is sandy; beyond are salt-beds and soda. In many localities, at the depth of ten or twelve feet, I saw fossil freshwater shells of the genera *Planorbis*, *Lymnea*, *Physa*, and others, which it is reasonable to suppose once lived at the bottom of lakes which covered these plains, as well as that of the valley of Mexico.

The volcanic mountains which form the boundaries to the plains

are flanked by ranges of limestone hills, similar in character to those below on the tierra templada. Undoubtedly the range which bounds the plains of Anahuac to the east is very rich in mineral treasure, as specimens of silver ore are frequently brought in by the Indians, but they, like those of Peru, conceal their knowledge of the localities with the utmost care. About three leagues from Perote I saw a vein of sulphuret of silver three feet in width, associated with blende and sulphate of copper.—*Proceedings of the Academy of Natural Sciences of Philadelphia*, vol. iv. p. 91.

METEOROLOGICAL OBSERVATIONS FOR MARCH 1849.

*Chiswick*.—March 1. Cloudy: clear and windy: cloudy. 2. Fine: cloudy: clear. 3. Overcast. 4. Clear: cloudy and fine: clear. 5. Fine: frosty. 6. Frosty: fine: overcast. 7. Cloudy: boisterous, with rain at night. 8. Fine: hail-shower: clear and frosty at night. 9. Clear and frosty: very fine: slight snow. 10. Clear: cloudy. 11, 12. Overcast throughout. 13. Fine. 14. Cold dusky haze. 15, 16. Overcast. 17. Foggy: fine: clear. 18. Foggy, with heavy dew: hazy: foggy and damp. 19. Foggy: overcast. 20. Dusky haze: overcast: clear. 21. Overcast: clear. 22. Foggy: cold haze: overcast. 23. Overcast: cold haze: densely overcast. 24. Fine, but cold: clear and frosty at night. 25. Snowing: cloudy and cold: overcast. 26. Densely clouded. 27. Dry haze. 28. Foggy: overcast throughout. 29. Hazy: rain: cloudy. 30. Heavy showers. 31. Clear: fine: cloudy.

Mean temperature of the month .....	41°·56
Mean temperature of March 1848 .....	42·43
Mean temperature of March for the last twenty years .....	42·62
Average amount of rain in March .....	1·36 inch.

*Boston*.—March 1. Cloudy: rain A.M. and stormy. 2. Cloudy. 3. Fine. 4. Cloudy. 5, 6. Fine. 7. Fine: rain P.M. 8. Cloudy: snow P.M. 9, 10. Fine. 11. Cloudy. 12. Fine. 13. Fine: rain early A.M. 14—16. Cloudy. 17. Fine. 18, 19. Foggy. 20—22. Cloudy. 23. Cloudy: rain P.M. 24. Snow. 25. Cloudy. 26. Fine. 27. Cloudy. 28. Rain: rain A.M. 29. Cloudy: rain P.M. 30, 31. Fine: rain P.M.

*Applegarth Manse, Dumfries-shire*.—March 1. Fair and clear A.M.: getting cloudy: rain P.M. 2. Fair A.M.: showers. 3. Fair: wind rising. 4. Fair: cloudy: fine sunset. 5. Slight shower: cleared. 6. Fair: cloudy: high wind P.M. 7. Rain all day, but light. 8. Frost hard: clear all day. 9. Frost keen. 10. Frost increasing in keenness. 11. Frost slight: shower. 12. Fine spring morning: got colder. 13—17. Fine dry weather. 18. Very fine day. 19. Still finer, like May. 20. The same, beautiful weather. 21. The same: fog P.M. 22. Frost during the night: fine day. 23, 24. Fine, though dull. 25. The same: brighter. 26. Frost: dull P.M. 27. The same dullness: no frost. 28. Clear and cool. 29. Shower early. 30. Showery. 31. Slight drops of rain: slight frost.

Mean temperature of the month .....	41°·8
Mean temperature of March 1848 .....	41·2
Mean temperature of March for twenty-five years .....	39·1
Rain in March 1848 .....	4·1 inches.
Rain in March for twenty years .....	2·3 „

*Sandwick Manse, Orkney*.—March 1. Bright: hail: light showers. 2. Cloudy: showers. 3. Cloudy: clear. 4. Clear: showers. 5. Sleet: showers. 6. Showers. 7. Sleet: snow-showers. 8. Snow-showers. 9. Drift: snow-showers. 10. Thaw: showers. 11. Rain: drizzle. 12. Cloudy: snow. 13. Snow-showers: thaw. 14. Drizzle. 15. Fog: damp. 16. Fog: fine. 17. Fine: fog. 18, 19. Fog. 20. Fine: clear aurora. 21. Fine: cloudy. 22. Fog: cloudy. 23. Rain. 24. Damp: drizzle. 25. Drizzle: aurora. 26. Sleet-showers: clear aurora. 27. Cloudy: showers. 28. Cloudy: clear aurora. 29. Cloudy. 30. showers. 31. Damp: clear.